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PUBLICATIONS FROM THE DIVISION OF METALLURGY DEPARTMENT OF COMMERCE BUREAU OF STANDARDS

The Bureau publications not starred may be purchased from the Superintendent of Documents, Government Printing Office, Washington, D. C., at the prices stated. Those marked with a star are out of print, but may be consulted at leading libraries. Articles by members of the Division of Metallurgy appearing in other publications are also listed. The numbers in the second column refer to numbers of Bureau publications, S for Scientific Papers, T for Technologic Papers, C for Circulars, L C for letter circulars.

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General Metallurgy.

Date	Number	Title
1916	S 266	J. R. Cain, Schram, E., and Cleams, H.E., Preparation of pure iron and iron-carbon alloys. 10¢ Bureau of Standards Bull., Vol. 13.
1916		A test of a surface combustion furnace. Jour. Ind. & Eng. Chem. 8, p. 361.
1916		Rawdon, H.S., Cain, J.R., Report on Ladle-Test Steel Ingots. Proc. A. S. T. M., Vol. 1, p. 129.
1919		Cain, J.R., and Rawdon, H.S. Report of Ladle-Test Ingot Investigation. Appendix of report of Com. A-1, A.S.T.M., 19 (1), p. 154.
1920		The metallurgical work of the Bureau of Standards. A.S.S.T. Feb. 25, 1921, Oct. 18, 1920.
1920		Howe, H.M. and Groesbeck, E.C. Prevention of columnar crystallization by rotation during solidification. Trans. A. I. M. M. E. 62, pp. 341-346.
1921		Rawdon, H.S. Fusion welding-a new use for castings. Disc. of fusion welding. Yearbook, Am. Iron & Steel Inst., pp. 340-348.
1920	LC-VIII-7S	Scott, H. Characteristics, uses and treatment of high-speed tool steels.
1920		Burgess, G.K. Governmental research. Trans. Roy. Can. Inst. Toronto, V, XIII, No. 1, Sci. Monthly pp. 341-352.
1920		Woodward, R.W. Recent developments in light aluminum alloys. Report of U.S. Advisory Committee for Aeronautics. 6, p. 35.
1921		French, H.J. Review of recent Japanese metallurgical investigations. Chem. Met. Eng. 24. Microstructure of chromium steels, pp. 703-6; Recent Work on chromium-tungsten steels pp. 573-5; Structure of Tungsten steels pp. 745-8.
1922	T 207	Burgess, G.K. and Woodward, R.W. The manufacture and properties of steel plates containing zirconium and other elements. 20¢

Date	No.	Title
*1922		Graphitization of white cast-iron below the A1 transformation. Disc. of Malleableizing of white cast iron. Trans. A.I.M.M.E. V. 67, p. 483.
1923		Marshall, L.H. Contribution to discussion of "Experiments with sherardizing". Trans. A.I.M.M.E. 68, p. 764.
1923		Neville, R.P. The preparation of platinum and platinum-rhodium alloy for thermocouples. Trans. Am. Electrochem. Soc. 43, p. 371.

Microscopy of Metals.

1916	T 60	Rawdon, H.S. Microstructural changes accompanying the annealing of cast bronze. 10¢
1916		Rawdon, H.S. Note on the occurrence and significance of twinned crystals in electrolytic copper. Trans. A. Chem. Met. Eng., 15, p. 406-8.
*1917	T82	Merica, P.D. and Woodward, R.W. Failure of Brass: 1. Microstructure and initial stress in wrought brasses of the type 60 per cent copper and 40 per cent zinc. 25¢
1917	T 90	Merica, P.D. Structure of coating on tinned sheet copper in relation to a specific case of corrosion. 5¢
1918	T 97	Rawdon, H.S. Some unusual features in the microstructure of wrought iron. Trans. A.I.M.M.E. 58, p. 493.
1919	C 80	Rawdon, H.S. Finn, A.N., Grossman, M.A. Protective metallic coatings for the rust-proofing of iron and steel. 20¢ Chem. Met. Eng. 20, pp. 458, 530, 591.
1919	S337	Merica, P.D., Waltenberg, R.G., Freeman, J.R.jr. Constitution and metallography of aluminum and its light alloys with copper and magnesium. 10¢ Vol. 15, B. of S. Bull. Bull. A.I.M.M.E. 151, p. 1031.
1919		Rawdon, H.S. Applications of metal radiography. Yearbook, A.I.S. Inst., p. 369.
1919		Rawdon, H.S. Microstructure of flaky steel. Bul. A. I. M.M.E. 792-804, 969-79, Trans. A.I.M.M.E., 62, p. 246 (1920).

Date	No.	Title
1920	S 399	Rawdon, H.S. and Lorentz, M.G. Metallographic etching reagents: I, for copper. 10¢ B. of S. Bull. Vol.16.
1920	T 156	Rawdon, H.S. and Epstein, S. Metallographic features revealed by the deep etching of iron and steel. 10¢
1920		Rawdon, H.S. Nature of the defects revealed by the deep etching of transversely fissured rails. Rail. Com. Am. Ry. Assn. 85, Chem. Met. Eng. 22, p. 505.
1920		Rawdon, H.S., Jordan, L., Groesbeck, E.C. Metallography of arc-fused steel. Chem. Met. Eng., 23, p. 777-84.
1920		Burgess, C.K. The microscope and the heat treatment of steel. Yearbook. Am. Iron & Steel Inst., 10, p. 154-173.
1920	S 356	Rawdon, H.S. and Scott, H. Notes on Microstructure of Iron and mild steel at high temperature. 10¢ Bull. Min. Met. Eng. 156 Dec. 18; Chem. Met. Eng. 22, p. 787. B. of S. Bull. Vol. 15.
1920	T 158	Rawdon, H.S. and Langdon, S.C. A peculiar type of intercrystalline brittleness of copper. 5¢ Bull. A.I.M.M.E. 158, Sec. 19, 1920.
1920	S 402	Rawdon, H.S. The use of ammonium persulphate for revealing the macrostructure of iron and steel. 5¢ Iron Age, 106, p. 965. B. of S. Bull. Vol. 16.
1921	C 42	Metallographic Testing. 5¢
1921		Rawdon, H.S. Some types of non-ferrous corrosion. Trans. Am. Electrochem. Soc. 39, p. 227.
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1921		Rawdon, H.S. Macroscopic examination of metals, Chem. & Met. Eng. 24; 385-7.
1921		Rawdon, H.S. Preparation of small specimens for microscopic examination. Chem. and Met. Eng. 24, pp. 475-6.
1921		Rawdon, H.S. Effects of metallic structure upon properties. Chem. and Met. Eng., 24, pp. 523-7.

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1921	C 42	Rawdon, H.S. Metallographic Testing (revised) 5¢
1921		Rawdon, H.S. The microscopic study of the structure of metals. Am. Mach. 55, p. 659.
1921	T 203	Groesbeck, E.C. The effect of phosphorus upon the microstructure and hardness of low carbon, open-hearth steels. 10¢
1922	C 113	Rawdon, H.S. The structure and related properties of metals. 25¢ Trans. A. S. S. T., 3, 1922, p. 649.
1922		Rawdon, H.S. Metallographic factors in carburization. Trans. A.I.M.M.E. p. 377. Discussion.
1922		Rawdon, H.S., Krynitsky, A.I., and Berliner, J.F.T. Corrosion patterns on cold worked tin and zinc. Chem. and Met. Eng. 26, p. 212.
1922	S 435	Rawdon, H.S. and Lorentz, M.G. Metallographic etching reagents, II. for copper alloys, nickel and the alpha alloys of nickel. 15¢ B. of S. Bull. Vol. 17.
1922		Rawdon, H.S. and Lorentz, M.G. Contrast etching for metallographic specimens. Chem. and Met. Eng. 25, p. 915.
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1922	S 452	Rawdon, H.S. and Epstein, S. The structure of martensitic carbon steels and the changes in microstructure which occur upon tempering. 15¢ B. of S. Bull. Vol. 18.
1922		Rawdon, H.S. Some metallograhpic features of manganese bronze, contribution to discussion of: The blue-constituent in high-strength manganese bronze, Bull. A.I.M.M.E. Trans. A.I.M.M.E., Vol. 68, p.660.
1922	S 464	Rawdon, H.S. and Sillers, F. Preparation and properties of pure iron alloys: The effect of manganese on the structure of alloys of the iron-carbon system. 10¢ Iron Age, 110, p. 1357-61. B. of S. Bull. Vol. 18.
1923		Rawdon, H.S. Structure and related properties of metals. Trans. A.S.S.T. 3, ; 649-679.

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1923		Blum, W. and Rawdon, H.S. The influence of the base metal on the structure of electrodeposits. Trans. Am. Electrochem. Soc. 44.
1923		Epstein, S. The microscopic examination of "dirty" steel. Chem. Met. Eng. 28, p. 482.
1923		Scott, H. The effect of high-temperature quenching on the microstructure of high carbon steels. Trans. A.S.S.T. 3, p. 593-623.
1923		Blum, W. and Rawdon, H.S. The crystalline form of electrodeposition of metals. Trans. Am. Electrochem. Soc. 44.

Heat Treatment and Thermal Analysis.

	LC 104	Heat Treatment of Steel.
1907	S 78	Burrows, C.W. The best method demagnetizing iron in magnetic testing. 15¢ B. of S. Bull. Vol. 4.
1908	S 99	Burgess, G.K. Methods of obtaining cooling curves. 10¢ B. of S. Bull. Vol. 5.
1919	S 335	Scott, H. Effect of rate of temperature change on the transformations in an alloy steel. 5¢ B. of S. Bull. Vol. 15. Bull. A.I.M.M.E. 146, p. 157. Trans. A.I.M.M.E. 62, p. 689 (1920).
1919	S 347	Merica, P.D., Waltenberg, R.G. and Scott, H. Heat treatment of duralumin. 10¢ Bull. A.I.M.M.E. 150, p. 913. B. of S. Bull. Vol. 15.
	LC 111	Characteristics, Treatment, and Uses of High-Speed Tool Steel.
1919	S 348	Scott, H. and Freeman, J.R.jr. Use of a modified Rosenhain furnace for thermal analysis. 5¢ B. of S. Bull. Vol. 15, Bull. A.I.M.M.E., 152, p. 1429.
1919	S 336	Merica, P.D. A simplification of the inverse-rate method for thermal analysis. 5¢ Bull. A.I.M.M.E. 151, p. 1021. B. of S. Bull. Vol. 15.
1919	T 129	Merica, P.D. and Gurevich, L.J. Notes on Graphitization of white cast iron upon annealing. 5¢ Bull. A.I.M.M.E. 151, p. 1063. Trans. A.I.M.M.E. 62, p. 509.

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1920	S 370	Scott, H. Critical ranges of some commercial nickel steels, 5¢ Bull. A.I.M.M.E., 158, sec. 16. B. of S. Bull. Vol. 16. Trans. A.I.M.M.E. 67, p. 100(1922)
1920	S 395	Scott, H. The high temperature treatment of high-speed steel and its relation to secondary hardening and to red-hardness: 10¢. Trans. A.S.S.T., 1, pp. 551- 26. B. of S. Bull. Vol. 16.
1920		Burgess, G.K. The microscope and the heat treatment of steel. Yearbook, Am. Iron and Steel Inst., pp. 154-173.
1921	S 405	Nusbaum, C., and Cheney, W.L. Effect of rate of cooling on the magnetic and other properties of an annealed eutectoid carbon steel. 5¢ B. of S. Bull. Vol. 17.
1921		Rawdon, H.S. The thermal characteristics of arc-fused steel. Contribution to discussion of: Heat Treatment of arc welds. Welding Eng. 6, No. 5, pp. 44-46.
1921		French, H.J. Elements of the Heat Treatment of Steel. Am. Mach. 55; pp. 907, 960.
1921		French, H.J. Artificial seasoning of steels. Chem. and Met. Eng. 25, No. 4, p. 155. Am. Mach. 55, p. 708.
1921	T 206	French, H.J. and Johnson, G.W. The effect of heat treatment upon the mechanical properties of one per cent carbon steels. 15¢ Trans. A.S.S.T. 2, p. 467.
1922		French, H.J. The effect of heat treatment on the mechanical properties of a carbon-molybdenum and a chromium-molybdenum steel. Trans. A.S.S.T. II, p. 769.
1922		Rawdon, H.S. and Epstein, S. Graphitization of a carbon tool-steel. Chem. Met. Eng. 27, p. 650.
1923		Vanick, J.S. and Sveshnikoff, W.W. Thermal transformations in some chrome vanadium steels. Trans. A.S.S.T. 3, p. 502.

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1923		Foley, F.B., Clayton, C.Y. and Burnholz, H.S. Review of present status of drill steel breakage and heat treatment. Trans. A.I.M.M.E. pamphlet 1206-M.
1923	T 235	Burgess, G.K. and Quick, G.W. Thermal stresses in steel car wheels. 15¢ Railway Age, 74, p. 951.
1923		French, H.J. A recording chronograph for the inverse-rate method of thermal analysis. 5¢ Trans. A.S.S.T., 3, 640.
1923		Clayton, C.Y. Hardness and heat-treatment of mining drill shanks. Trans, A.I.M.M.E. 1208-M.

Temperature Measurement.

*1905	S 24	Burgess, G.K. Radiation from platinum at high temperatures. 5¢ B. of S. Bull. Vol. 1.
*1907	S 55	Waidner, C.W. and Burgess, G.K. Radiation from and melting points of palledium and platinum. 10¢ B. of S. Bull. Vol. 4.
*1907	S 62	Burgess, G.K. Melting points of the iron-group elements by a new radiation method. 10¢ B. of S. Bull. Vol. 4.
*1909	S 121	Burgess, G.K. The estimation of the temperature of copper by means of optical pyrometers. 5¢ B. of S. Bull. Vol. 6.
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1913	S 198	Burgess, G.K. A micropyrometer. 5¢ B. of S. Bull. Vol.9
1914	S 205	Burgess, G.K. and Waltenberg, R.G. Melting points of the refractory elements. I. Elements of atomic weight from 48 to 59. 5¢ B. of S. Bull. Vol. 10.
1914	S 242	Burgess, G.K. and Waltenberg, R.G. The emissivity of metals and oxides. II. Measurements with the micro-pyrometer. 5¢ B. of S. Bull. Vol. 10.
1914	T 38	Crowe, G.G., Rawdon, H.S. and Waltenberg, R.G. Observations on finishing temperatures and properties of rails. 10¢.

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1915	S 249	Burgess, G.K. and Foote, P.D. The emissivity of metals and oxides. IV. Iron Oxide .5¢ B. of S. Bull. Vol. 12.
1915	S 250	Burgess, G.K. and Foote, P.D. Characteristics of radiation pyrometers. 20¢ B. of S. Bull. Vol. 12.
1916		Burgess, G.K. Thermometry, pryometry and heat conductivity. Standard Handbook for Electric Engrs.
1917	C 66	Standard samples of thermometric fixed points. 5¢
1917	T 91	Burgess, G.K. Temperature measurements in Bessemer and open-nearth pracice. 5¢
1917		Woodward, R.W. and Hanison, T.R. Notes on the thermocouple nicrhome constantan. Chem. Met. Eng. 16, p.647.
1919	S 348	Scott,H. and Freeman, J.R. jr. Use of a modified Rosenhain furnace for thermal analysis. 5¢ B. of S. Bull. vol. 15.
1919		Waidner, C.W. and Burgess, G.K. Metals for Pyrometer Standardization. Bull. A.I.M.M.E., 152, p. 1511.
1919	C 35	Melting points of chemical elements and other standard temperatures. 5¢
1919		Burgess, G.K. Temperature Measurements in steel furnaces. Yearbook. Am. I.and S. Inst. Oct. p. 427.
1920		Burgess, G.K. Report of the pyrometer committee of the National Research Council, A.I.M.M.E. Sept.

Physical Properties

LCVIII-6 Proprietary Light Aluminum Alloys.

*1906	S 38	Guthe, K.E. and Austin, L.W. Experiments on the Heusler magnetic alloys. 10¢ B. of S. Bull. Vol. 2.
1909	S 109	Lloyd, M.G. and Fisher, J.U.S. The testing of transformer steel. 5¢ B. of S. Bull. Vol. 5.
1914	S 222	Burgess, G.K. and Foote, P.D. The emissivity of metals and oxides. I. Nickel oxide (NiO) in the ranges of 600 to 1300° C. 10¢ B. of S. Bull. Vol. 10.

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1914	T 38	Crowe, J.J., Rawdon, H.S. and Waltenberg, R.G. Observations on finishing tempe.atures and properties of rails. 35¢
1915	S 236	Burgess, G.K. and Kellberg, I.N. Electrical resistance and critical ranges of pure iron. 5¢ B. of S. vol. 11, (1915).
1915	S 249	Burgess, G.K. and Foote, P.D. Emissivity of Metals and Oxides. IV. Iron Oxide. 5¢ B. of S. Bull. vol. 12.
1915		Burgess, G.K. and Hadfield, R.A. Sound ingots and rails. Trans. Am. Inst. Min. Eng. 51, p. 862; Proc. Iron and Steel Inst. of Great Britain. 92, No. 2, p. 199.
*1915	S 243	Foote, P.D. The emissivity of metals and oxides. III. The total emissivity of platinum and the relation between total emissivity and resistivity. 5¢ B. of S. Bull. Vol. 12.
1915	S 254	Burgess, G.K. and Sale, P.D. A study of the quality of platinum ware. 10¢. B. of S. Bull. Vol. 12.
1915		Burgess, G.K. and Kellberg, I.N. On a supposed allotropy of copper. J. Wash. Acad. 5, p. 657.
1915		Merica, P.D. and Woodward, R.W., Failure of structural brass. Trans. Am. Inst. Met. p. 298.
1915		Haneman, H., and Merica, P.D. Magnetic studies of mechanical deformation in certain ferro-magnetic metals and alloys. Bull. Am. Inst. Chem. Eng. p. 2371.
1916	S 272	Burrows, C.W. Correlation of the magnetic and mechanical properties of steel. 15¢ B. of S. Bull. Vol. 13.
1916	T 59	Karr, C.P. and Rawdon, H.S. Standard Test Specimens of Zinc bronze. (88 Cu - 10 Sn - 2 Zn) 25¢
1916	T 83	Merica, P.D. Failure of Brass: 2. Effect of corrosion on ductility and strength of brass. 5¢
1916		Burgess, G.K. Some problems in physical metallurgy at the Bureau of Standards. J. Frank. Inst. 182, p. 19.

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1916	T 84	Merica, P.D. and Karr, C.P. Failure of brass. 3. Initial stresses produced by the "burning in" of manganese bronze. 5¢
1918	C 73	Copper. 20¢ Chem. Met. Eng. 18, pp. 121, 192, 303, 357.
1918	C 76	Merica, P.D. Aluminum and its light alloys. 20¢ Chem. Met. Eng. 19, p. 135, 200, 329, 587, 635.
1918	S 321	Merica, P.D. and Schad, L.W. Thermal expansion of alpha and beta brass between 0° and 600° C, in relation to the mechanical properties of heterogeneous brasses of the Muntz Metal type. 10¢ B. of S. Bull. Vol. 14. J. Am. Inst. Met. 11, No. 3, p. 396.
1919	T 132	Merica, P.D , Waltenberg, R.G., and Finn, A.N. Mechanical properties and resistnace to corrosion of rolled light alloys of aluminum and magnesium with copper, nickel and manganese 5¢. Bull. A.I.M.M.E. 151, p. 1091
1919	LCVIII-5	Merica, P.D. Letter circular on properties of light aluminum alloys.
1919		Gurevich, L.J. and Wickers, E. Comparative tests of Palau and Rhotanium ware as substitutes for platinum laboratory utensils. J. Ind. and Eng. Chem. 11. p. 570.
1919	S 350	Cain, J.R. Equilibrium conditions in the system carbon, iron oxide, and hydrogen in relation to the Ledebur method for determining oxygen in steel. 5¢ B. of S. Bull. vol. 15.
1919		French, H.J. Manufacture and properties of light wall structural tubing. Bull. A.I.M.M.E. (Sept. 1919) 153, p. 1855. Trans. A.I.M.M.E. 62, p. 303 (1920).
1919		Staley, H.F. and Karr, C.P. Physical properties of certain lead-zinc bronzes, Bull. A.I.M.M.E. (Sept.1919) 153, p. 2485.
1919	T 139	Merica, P.D. and Karr, C.P. Some tests of light aluminum casting alloys. The effect of heat treatment. A.S.T.M. 19, II, p. 298.
1920	S 377	Rawdon, H.S. The intercrystalline brittleness of lead. 5¢ Bull. A.I.M.M.E., 158, Sec. 7. B. of S. Bull. Vol.16.

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1920	T 143	Rawdon, H.S. and Krynitsky, A.I. A study of the deterioration of nickel spark plug electrodes in service.
1920		French, H.J. Tensile properties of boiler plate at elevated temperatures. Bull. A.I.M.M.E. 158, Sec. 15. Trans. A.I.M.M.E. 67, p. 87 (1922).
1920	S 396	Scott, H., Movius, G.H. Thermal and physical changes accompanying the heating of hardened carbon steels. 5¢
1920	S 404	Nusbaum, C., Cheney, W.L., and Scott, H. The magnetic reluctivity relationship as related to certain structures of a eutectoid carbon steel. 5¢ B. of S. Bull. Vol. 16.
1920	T 172	Strand, C.H. Cast iron for locomotive cylinder parts. 10¢
1920		Scott, H. and Movius, G.H. Similarity of the magnetic change in ferrite and cementite. Chem. and Met. Eng. 22, No. 23, P. 1069.
1920	S 363	Waltenberg, R.G. and Coblentz, W.W. Preparation and reflective properties of some alloys of aluminum with magnesium and zinc. 5¢ B. of S. Bull. Vol. 15.
1920		Langdon, S.C. and Grossman, M.A. The embrittling effects of cleaning and pickling upon carbon steels. Am. Electrochem. Soc. 37, p. 543.
1920	T 163	Howe, H.M. and Groesbeck, E.C. Stresses caused by cold rolling. 5¢
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